



The Raleigh Amateur Radio Society's

EXCITER

December 2008

Issue No. 453

LOOK INSIDE FOR DETAILS:

- The RARS General Meeting is the 1st Tuesday of the month.
- The RARS net meets every night @ 8 pm on 146.64.
- The RARS Technical and Trader's net is Saturdays @ 8:30 pm or following the RARS net.
- RARS meets for a monthly dinner on the 2nd Tuesday of each month.

NOTE: There will not be a RARS board meeting for the month of December.

RARS December Meeting

The December meeting on Tuesday, December 2 will be at our new meeting location at the First Alliance Church (4400 Buffaloe Road). The evening will begin with refreshments at 7 pm. Members are asked to bring a snack to share and RARS will provide the drinks, plates, and utensils. The room will be setup for banquet seating. At 7:30 pm we will have a short meeting that will include the installation of the 2009 officers. Following the meeting will be a performance by the Encore Singers. The members of First Alliance Church will be invited to join us for the evening and all members are encouraged to bring their families and friends. There will be 4 special door prizes. It's sure to be an enjoyable evening!

New Meeting Location

**Article by Selene Montgomery KG4RMT
RARS President**

For many years, RARS has been using the facilities at Forest Hills Baptist Church for our member gatherings. The church's ministries have grown and the space available to outside groups has been caught in the squeeze. As one of those groups, the last year has meant using a much smaller room for our meetings, and the situation has not been a comfortable one. Change is always uncomfortable, and at times inconvenient for some. There is never a solution that will be the best for everyone.

After months of searching, the RARS Board has decided to move the membership meetings and quarterly VE test sessions to the First Alliance Church, 4400 Buffaloe Rd, Raleigh, NC, beginning with the holiday gathering on December 2. Several past RARS events have been held at this location, including the October auction. For membership meetings we will be using the sanctuary, which we can configure as needed. There will be audio-visual equipment and a kitchen available to us, plentiful parking, easy access for all, and convenient restrooms. We'll use a classroom for quarterly VE testing.

This seems to be the best outcome for the club as a whole. There will be space for socializing, programs, entertainment, and refreshments without stumbling over each other. The financial arrangement is well within the line item on our budget for meeting expense.

(Continued on page 3)

RARS Officers

President:

Selene Montgomery
KG4RMT
919.577.1254
kg4rmt@earthlink.net

Vice-President:

Richard Kelly-Crapse
KB4TKQ
919.577.6290
rwcrapse@att.com

Secretary:

Charles Swindell
WB4DCM
919.848.0410
wb4dcm@arrl.net

Treasurer:

Greg Seamster
KE4PAX
919.859.0029
ke4pax@arrl.net



The Raleigh Amateur Radio Society

The Raleigh Amateur Radio Society, Inc. (RARS) was founded in 1969 and continues to serve and support the Amateur Radio community in the greater Triangle area. In 1999, the society incorporated a new RARS and obtained 501(c)(3) non-profit tax status.

The objectives of the club are to promote worldwide friendship through amateur radio; to be of public service by providing

radio communications in times of disaster, emergency, or civic need; to educate members in radio technique; and to provide training classes to assist in obtaining amateur radio licenses.

Anyone interested in amateur radio is eligible to apply for membership. Dues for regular licensed amateurs are \$18 per year (from July 1 through June 30). Additional immediate family mem-

bers pay \$5 each per year. Dues for licensed amateurs older than 59 or younger than 16 are \$12 per year. Dues for non-licensed associate members are \$9 per year. Applications for membership may be obtained from the treasurer or on the RARS website (RARS.org).



The *Exciter*

The *Exciter* is the official newsletter of the Raleigh Amateur Radio Society. It appears each month as a PDF on the RARS website at www.rars.org. Members receive email notification when the latest version is available. Please provide your email address to the Treasurer.

The *Exciter* welcomes articles,

advertising, and other contributions. To submit a piece to the newsletter, please contact the Editor.

The views expressed in the *Exciter* are those of the individual authors and do not necessarily reflect the views of the Editor or RARS.

The Editor reserves the right to edit any and all pieces.

The submission deadline for the January *Exciter* is December 19. The submission deadline for the February *Exciter* is January 16.

All submissions must be final. Drafts are not accepted.

Editor:
Courtney Enzor
KI4HOS
editor@rars.org

New Meeting Location (Continued from page 1)

Special thanks go to Steve Ferrarini KJ4BX, for working out the details with First Alliance Church.

RARS will continue to need your help. If you can come early to help with setting up our space, please do so. Help will also be needed at the end of the sessions to put things back as we found them. The normal schedule will be:

Setup 6:30 pm

Refreshments: 7 pm

Meeting: 7:30 pm

Reset and Cleanup: After the meeting

RARS is grateful to Forest Hills Baptist Church for being our host over the last 14 years or so, and we wish them continued growth. We look forward to calling First Alliance Church our new home and hope to see you and your family on December 2nd.

RARS General Meeting

Date: First Tuesday of each month

Location: First Alliance Church

4400 Buffaloe Road

Raleigh, NC

Time: People begin arriving at 7 pm. The meeting officially begins at 7:30 pm.

RARS Monthly Dinner

Join us on the 2nd Tuesday of each month for the RARS dinner. It's open to everyone: RARS members, non-members, friends, and family – feel free to bring your little ones! Dinner begins at 6:30 pm.

The December dinner will be at Perkins Restaurant (2657 Appliance Court in Raleigh).

RARS Repeaters in Raleigh

145.13 (82.5 PL), 146.64, & 444.525 (82.5 PL)

Join us for the nightly RARS net @ 8 pm on the 146.64. All hams holding a Technician class license or higher are invited to checkin. We welcome both RARS and non-RARS members to the net.

VE Testing

The RARS VEs will accept walk-in testing at the February, May, August, and November RARS meetings; the RARSfest in April; the Cary Swapfest in July; the JARSfest in November; and following RARS license classes.

Please bring a photo ID, your current license, a copy of your current license, and any CSCEs you have for credit. Visit www.rars.org for more information.



October 2008 RARS Net Reports

Checkins: 550	Special Interest Nets:
Traffic: 30/25	Checkins: 120
Minutes: 620	Minutes: 420
Sessions: 31	Sessions: 12

Upcoming Hamfests

December 6-7	Tampa Bay Hamfest Palmetto, FL http://fgcarc.org/
January 10	Winston-Salem FirstFest Winston-Salem, NC http://www.w4nc.com/
January 10	TechFest 2009 Lawrenceville, GA http://www.gars.org/
February 7	FrostFest (ARRL State Convention) Richmond, VA http://www.frostfest.com/

Welcome to RARS!

Kirk Ellis KI4RK

December RARS Meeting

The December program will be the annual RARS holiday party at the First Alliance Church. The program will include the induction of the 2009 officers and the Encore Singers.

December Birthdays

Rick	K4RLE	12/01
John	W2YBN	12/02
Bill	K4SG	12/03
Randy	KE4PNT	12/06
Ronnie	W4RJF	12/06
Virginia	NC4VA	12/09
Bruce	KC4UQN	12/09
Clyde	WB2EYC	12/10
George Herring		12/11
Roger	KS4VX	12/12
Frank	KA2FWC	12/12
Ebb	W3EPA	12/13
Sam	KI4TRG	12/13
Conner	KE4ZNS	12/15
Ed	W4YC	12/16
Cliff	AG4XR	12/17
Kevin	KC4THW	12/18
Roger	W3EZR	12/18
Bert	W4FMN	12/21
Alex	W4FSO	12/24
Herb	KF4NGR	12/25
David	KG4RIY	12/27
Gerry	K4GCJ	12/31
Dick	KD4ISC	12/31

**By Virginia Enzor NC4VA,
Emergency Coordinator, Central Carolina SKYWARN**



The 10th annual SKYWARN Recognition Day will take place Saturday, December 6, 2008, from 0000-2400 UTC. Created in 1999 by the National Weather Service and the American Radio Relay League, the event celebrates the contributions that SKYWARN radio operators make to the National Weather Service to help keep their communities safe. During the event, SKYWARN operators will visit NWS offices to contact other NWS offices and radio operators. Radio operators will exchange names, call signs, locations, signal reports, and a 1 or 2-word weather report.

Over 100 NWS offices across the country will participate in the event, including the Raleigh National Weather and Central Carolina SKYWARN.

Using the call sign WX4NC, Central Carolina SKYWARN will operate on Saturday from 9:00 AM to 5:00 PM, making contacts on 2 meters, the Carolina 440 UHF Link System, IRLP, and HF. Locally, you will find SKYWARN on 146.88 MHz, 147.105 MHz [82.5 Hz], 147.135 MHz [82.5 Hz], and 146.775 MHz for IRLP. For a list of repeaters on the Carolina 440 UHF Link System, please visit www.carolina440.net.

A special QSL card has been designed for this event. Stations who log a contact with WX4NC may send a SASE to the following address to receive one:

National Weather Service
Raleigh Forecast Office
1005 Capability Drive, Suite 300
Centennial Campus
Raleigh, North Carolina 27606

Hams working at least one NWS office can receive an 8.5 x 11 inch certificate by submitting a list of NWS stations worked with a SASE to:

SKYWARN Recognition Day
920 Armory Road
Goodland, KS 67735

If you have never participated in SKYWARN Recognition Day, please do so this year and join in the fun! For more information about Central Carolina SKYWARN, please visit www.centralcarolinaskywarn.net. For more information about SKYWARN Recognition Day, please visit <http://www.crh.noaa.gov/hamradio/index.php>.

Meet a new amateur radio operator! Davis Peacock recently studied for his Technician license and passed! It's great to see the hobby grow and families participate. Meet Davis!

1. How old are you?

I am 10 years old, turning 11 in December.

2. Where do you go to school?

I go to school at St. Timothy's school and am in the 5th grade and hope to go there until 8th grade.

3. What kinds of things do you like to do?

Other than humming, I like to play with my model train, play with Legos, design cool things, and check in with my friends on the Old Goat Net on the radio.

4. How did you first learn about amateur radio?

At my grandparents house, I asked my grandfather what a radio was. A minute later I was listening to a conversation on 10 meters.

5. What made you want to get your license?

Well my grandfather had his Extra and I thought it would be fun to talk on the radio.

6. How did you prepare for the exam?

During the time I took the class I studied a lot and studied the night before. Note: I passed on the second try.

7. What do you like best about ham radio?

I like the idea that you can keep in touch without using phone manners.

8. What are your future plans with ham radio?

My future plan with ham radio is to get my General Class license.

9. Any advice for other kids who may want to earn their license?

I say studying can help, but it doesn't hurt to practice Ohm's law with decimals.



Above: Davis and Gary Pearce KN4AQ talk radio at the Tune in the World event. Right: Davis and his dad proudly show off their certificates after passing the Tech exam. Photos by Virginia Enzor NC4VA.

Article by Gary Pearce KN4AQ

There was an extra challenge for the hams (and non-hams) who Chuck K4HF recruited to act as radio operators for the Red Cross First Aid Station at the 2008 State Fair. Each operator had to pass several of the FEMA “NIMS” courses in order to volunteer! At first, the volunteer list was a little light. But by Fair time, enough operators had passed the courses to fill out the schedule.

The reason for the requirement was that public safety for the Fair – the Police, Fire Dept, EMS and the Red Cross – were going to operate under the Incident Command structure detailed in the courses. A cubicle was set up outside the radio room, and representatives of each authority (usually) staffed positions in the cube.

In practice, our operation was pretty much like it's always been. The radio operators took directions from the Red Cross Supervisor, and passed them to the First Aid Teams in the field. For the second year, we used a talk group on the 800 MHz VIPER trunking system, sharing a channel with EMS. The radio system worked well. This year we did not set up the old 460 MHz radios.



Clockwise from top left: First Aid team transports a patient. Bank of 800 MHz digital radios on the VIPER system. Red Cross first aid station in the Martin building. Chuck Littlewood K3HF examines the 800 MHz digital radios with Al Nickle KE4IHX and Mark Womack AJ4KZ. **The Exciter • December 2008 • No. 453**

Article by Gary Pearce KN4AQ

A whole bunch of new D-STAR repeaters appeared in North Carolina as summer drew to a close. We now have D-STAR machines in Raleigh, Durham, Burlington, Greensboro and Charlotte, with overlapping coverage from Raleigh to Charlotte along the I-40/85 corridor. That mirrors the growth of D-STAR nationwide, even worldwide. You can get a look at how D-STAR is growing by looking at the users and repeater directory at www.dstarusers.com.

With that growth comes a change in my recommendation about buying a D-STAR radio. Previously, I said that only those willing to risk being on a leading edge that could break off into nowhere should consider D-STAR. Now, there are enough repeaters that I'd recommend D-STAR to any ham interested in the new technology.

There is still some risk. ICOM is still the only manufacturer making D-STAR equipment (though there is one non-ICOM product, the DVDongle, that gets you onto the worldwide D-STAR network through your computer and Internet connection – see the sidebar). ICOM's D-STAR radios are still on the expensive side, but prices are coming down. You can get a D-STAR-ready IC-91AD handheld for under \$400 now, and the mono-band radios are even less expensive. More downside: I spoke to a Kenwood sales manager at the TAPR conference in Chicago recently, and he was adamant that Kenwood is not getting into D-STAR.

So you should go into D-STAR (or stay away) with your eyes wide open. My article "Operating D-STAR" (September 2007, QST) is still a good primer, and you can download a pdf of it on my web site: www.arvideonews.com, in the Digital Voice section. One thing to consider is that all D-STAR radios are dual-mode. They're good analog radios, and the D-STAR part of them is on a plug-in board. ICOM isn't even whispering this, but if D-STAR should be replaced by different, or newer technology, maybe the radios can be upgraded with a new board.

A Review of NC D-STAR Repeaters

Raleigh: K4ITL B, 442.2125 MHz

The K4ITL repeater came on-line in September. It's up about 1800' on one of the WRAL TV towers near Clayton, and has excellent coverage of the greater Triangle area. The antenna sits



Above: Arch, KT4AT, making adjustments on the repeater prior to full installation of the D-Star equipment. GARA is presently the only club in North Carolina sponsoring a D-Star repeater. Many thanks to Arch, KT4AT, who assisted in getting D-Star system up and running for the club.

on the southwest side of the platform, so expect some shadowing to the northeast. This repeater does not have a Gateway. It's sponsored by Danny Hampton K4ITL, as part of the PCRN. It's an ICOM repeater, but uses a 3rd party controller built by Arch KT4AT called DController, allowing it to have voice IDs, a courtesy beep, and hang-time.

Durham: KB4HG B, 442.5375 MHz

This repeater is the first D-STAR machine in the state. Rhett Isley KB4HG put it up on a 300' tower in Sanford in 2007. It spent some time borrowing the RARS Bayleaf tower before moving to TV Hill in Durham last spring, with space courtesy of Charlie Durst NC4CD. Coverage is good in the Durham/Chapel Hill area, but spotty in Cary and Raleigh. Also no Gateway, but the site does have an Internet connection, so it's being considered. This is also an ICOM repeater, using an updated version of Arch's prototype DController.



Above: D-Star set up with computer monitor attached. The monitor and keyboard are not left at the site but used to program the repeater and check logs.

Burlington: AK4EG C, 145.32 MHz; AK4EG B, 444.8875 MHz

These repeaters began life as the backyard project of Peter Scherp AI4UE. As such, they had almost no signal outside of Burlington. Over the summer, Peter moved them to Cane Mountain, a tall lump of ground in south Alamance County. Now they cover from the higher spots of Raleigh, through Greensboro, to the higher spots of Winston-Salem. They are all-ICOM, and do have a Gateway connection.

One note of caution – the 145.32 frequency was coordinated at Peter's lower location, based on SERA's new policy of coordinating narrowband digital repeaters like D-STAR in between conventional analog channels, with significant geographic spacing. On Cane Mountain it is officially uncoordinated, and its signal encroaches into the coverage area of the 145.31 repeater in Thomasville. There are no 145.31 or 145.33 repeaters in the Triangle area, so using it from here isn't a problem (more on this later in the article).

Greensboro: W4GSO B, 442.8625 MHz

This repeater appeared just a week after the K4ITL Raleigh machine was launched. The only club-sponsored D-STAR repeater in the state, it had a user group ready and waiting, and the night it was turned on, about 25 different callsigns were heard. A few, like mine, were from out

of the area, but most were Greensboro Amateur Radio Association members who bought radios and had been waiting for months. Their enthusiasm was tempered only a little by being able to use the Burlington machines that began to cover Greensboro a few weeks earlier.

This is a medium-wide coverage machine. The antenna is only up 400', but it tickles the higher spots of Raleigh/Durham, and gets solid from Burlington through Winston-Salem. For the moment, it's an ICOM repeater with a DController. Arch is their local hero, and he is currently working on converting a GE MSTR II analog repeater to D-STAR. I believe this will be the world's first fully-functional non-ICOM D-STAR repeater. For now, there is no Gateway, but Arch's controller has provisions for many things not included in ICOM's controller, and RF linking is one of them. We're dreaming of an RF-linked D-STAR network in North Carolina.

Charlotte: KA4YMY C, 145.14 MHz; KI4WXS B, 443.8625 MHz

Along with KB4HG's machine in Durham, the Charlotte UHF machine is North Carolina's Granddaddy D-STAR repeater. It's been on since Christmas 2007! The VHF machine is the baby of the group, hitting the air in early October 2008. The repeaters are sponsored by the Metro-Lina UHF Group (www.metro-uhf.org), a loose association of hams led by Ken Johnson KC4Y-OZ and Steve Koone KA4YMY.

The UHF machine is on Spencer Mountain, a tall rock west of Charlotte in Gaston County that used to be the site of some Charlotte TV stations. It's an all-ICOM machine, has an Internet Gateway, and covers a wide area around Gaston and Mecklenburg Counties.

The VHF machine is about 1000' up another former TV tower in northeast Charlotte. It's using an abandoned commercial antenna that's cut for the 152 MHz range, so performance isn't as good as Ken and Steve hoped. Replacing that antenna will be an expensive proposition (over a thousand dollars for the antenna and tower crew). At the moment, it's an ICOM repeater (borrowed from K4ITL), with the state's third DController, but no Gateway. Arch is working on another GE MSTR II radio to handle the RF.

Are those frequencies right?

If you are familiar with the frequencies used for VHF and UHF repeaters, you might be squinting a little at the numbers I've listed above. The UHF frequencies seem to have a few too many digits in them, and the VHF channels are in between what we expect to see for repeaters. Are they right?

Barring a typo, they are correct. As I mentioned in the Burlington section, these repeaters are all on the new SERA (SouthEastern Repeater Association) band plan for narrowband digital repeaters. D-STAR repeaters occupy about 7 kHz of spectrum, compared to an analog re-

peater's 16 kHz. There's been a lot of debate nationally about just how to accommodate these repeaters and take advantage of their spectrum efficiency. SERA decided that one way would be to put the D-STAR repeaters on channels in-between the analog channels – 10 kHz above and below the channels at the low end of two-meters (where the channel steps are 20 kHz), and 12.5 kHz above and below channels on UHF (where the channel steps are 25 kHz) – along with geographic separation of about 50 miles.

How well will it work? That's a good question. SERA's 50-mile separation rule for the top of the two-meter band – with 15 kHz channel steps for analog repeaters – works pretty well. You rarely hear a complaint. The D-STAR arrangement squeezes the turnip a little harder, though, and mixes modulation schemes. Hams unfamiliar with the sound of digital signals in analog receivers may not recognize the nature of interference. Well, most hams label any kind of FM interference as "intermod" anyway. An on-channel digital signal sounds like white noise, or maybe a buzz-saw. But even I'm not very familiar with what an adjacent-channel digital signal does to an analog receiver. Interference to a D-STAR signal initially creates garble, but if it gets bad enough, the desired signal just disappears and you hear silence. It can be hard to diagnose signal problems when listening to D-STAR.

We might all find out what D-STAR does to analog. The Charlotte 145.14 D-STAR machine is adjacent to the Greensboro 145.15 analog repeater, and may have some overlapping coverage. Raleigh is slated for a 145.26 D-STAR, which is adjacent to the Greensboro 145.25 analog repeater. Local users won't have a problem, but hams DXing the machines from deep in their neighbor's coverage area may suffer, and cause, some interference.

The Future

Is D-STAR the future of Amateur Radio? Two years ago, when ICOM first rolled out its full line of repeaters, mobile and handheld radios, it was a much bigger gamble. Now we have a lot of repeaters on the air, with a lot of users enjoying them. It's a safer bet for your money, but it's still a bet.

Any given repeater, though, can suffer the same lack of consistent use that their analog neigh-



Above: This shows an Icom 91AD on top of the computer that's one rack unit. The computer is the heart of the controller operation along with the Icom D-Star machine. The DController was built and programmed by Arch. Its functions far outperform the Icom controller. The power amp is in the background, which is a GE Mastr II amp for full continuous duty operation being driven by very low power of power from the RP-4000.

bors suffer, after the initial surge of activity on the novel system begins to wane. Steve KA4Y-MY has made that lament about the Charlotte machine once or twice. And Kenwood, Yaesu, Alinco, and any other potential manufacturer have yet to take the plunge and join ICOM in producing radios.

Some knowledgeable hams say that D-STAR isn't the best digital mode we could do. Some of them would like to see the APCO P-25 standard adopted, but I'm told APCO doesn't want see frequency agile P-25 radios in the field, and that's what ham radios would be. Some hams just hold out for something different.

D-STAR has a big head start now. I think we might be better off maximizing the potential of D-STAR for a decade or so, and then looking at what new capabilities the never-ending advance of technology brings us. One thing for sure – things will splinter, and we're not going to see a repeat of the relative compatibility and conformity we've enjoyed for the past half-century. But that's another article.

The DVDongle: How to Do D-STAR Without a Radio

Article by Gary Pearce KN4AQ

IRLP made repeater coverage worldwide using the Internet as a link. Echolink extended that capability to individual hams using their computers and Internet connections. D-STAR began life as an Internet-centric system, with repeaters connected together via Gateways. Now a device called the DVDongle brings Echolink-like functionality on D-STAR to individual hams, allowing them to tap into the Gateways and talk through D-STAR repeaters worldwide.

I've written a review of the DVDongle for *QST* that should appear in the next few months, so I can't take the wind out of that article's sails. But I can tell you that if you find yourself interested in D-STAR, but don't have a radio or a local repeater, the DVDongle may bridge the gap. If you are already on D-STAR, the DVDongle will add significant capability to your home station operation.

The DVDongle is a small slab of blue plastic with an AMBE 2000 vocoder chip inside. That creates a D-STAR compatible data stream that the Dongle's software, DV Tool, uses to let you reach out and touch most of the Gateway-enabled D-STAR repeaters worldwide. It's very much like Echolink. You use a headset or mic/speaker on your computer, and the software, to find, connect to and talk through repeaters. The biggest difference is that Echolink is free. A DVDongle will set you back about 200 bucks.

The current version of DV Tool lets you chat through D-STAR repeaters. Future versions will add most of the other functions a radio can do (like low-speed data, GPS data, call sign squelch), and some things the radios can't do (like monitor multiple gateways at once).

A really important consideration is that in order to use Gateways, including via the Dongle, you have to be registered. Radio users register with the administrator of the nearest Gateway (find them at www.dstarusers.com). Dongle users who don't have a local repeater have to find a willing admin elsewhere to help. Ken KC4YOZ, the Charlotte D-STAR admin, has been kind enough to register both radio and Dongle users from other areas of the state.

More information is available at www.dvdongle.com. The Dongle is for sale at HRO, AES and several other outlets.

PRESIDENT'S CORNER

Column by Selene Montgomery KG4RMT

The holiday season has arrived! As we recuperate from the overeating of Thanksgiving, we prepare for the joys and festivities included in the month of December.

The last month was full of amateur radio events - public service, contests, youth contact with the International Space Station, JARSFEST 2009, and additional licensees in our hobby. The month ahead holds more contests, holiday gatherings, and for those of us who travel, the chance to talk and meet with others outside our local groups.

Our holiday gathering on December 2 at the First Alliance Church will be a chance to relax and enjoy each other's company. The night will begin around 7 pm with refreshments. We ask members to bring a snack to share and RARS will provide the drinks and some special door prizes. At 7:30 pm, we will have a short meeting that will include the installation of officers for 2009. The evening will turn to entertainment, as the Encore Singers serenade us.

Our new hosts at First Alliance Church have been invited to join us for the evening's festivities. You are encouraged to bring your families and friends to join in our celebration.

I want to thank the RARS Board of Directors, the committee heads, and the members, for your support and energy this past year. I send my best holiday wishes to all of you, and I hope that 2009 will bring all of us understanding, opportunity, peace, laughter, and most of all, love.

Reprinted from the November 7, 2008 ARRL letter:

On November 6, The ARRL VEC <<http://www.arrl.org/arrlvec/>> announced that as of January 1, 2009, the fee to take an ARRL Volunteer Examiner (VE)-administered Amateur Radio license exam will increase by \$1, from \$14 to \$15. According to ARRL VEC Manager Maria Somma, AB1FM, ARRL VE teams may retain up to \$7 of this fee to directly reimburse their teams' out-of-pocket examination expenses; currently, VE teams keep \$6. This is the first time in four years that the examination fee has been adjusted.

Somma said that the FCC allows VECs to collect an examination reimbursement fee from each candidate who takes one or more exam elements. "VEs and VECs may be reimbursed by examinees for out-of-pocket expenses incurred in preparing, processing, administering or coordinating an examination for an amateur operator license (FCC Rule 97.527)," she said <http://edocket.access.gpo.gov/cfr_2002/octqtr/pdf/47cfr97.527.pdf>. "These exam fees help the VEC recover its costs of providing its services." Saying that every examinee at each ARRL coordinated examination session is charged the same fee in accordance with the annually-established fee schedule, "Any person sitting for an exam, or having a new license or upgrade processed at a test sessions, must pay the exam fee applicable for the calendar year," Somma explained.

"The ARRL VEC's exam fee for calendar year 2009 is \$15. Each time a candidate pays one exam fee, they are entitled to take tests for Elements 2, 3 and 4 as needed, up to all three elements under the single exam fee. Each time an examinee retakes an exam element (assuming the VE Team has different exam design available), another exam fee is charged." VE teams may elect to keep a prescribed portion of each exam fee collected exclusively to offset expenses that are directly incurred in administering the VE program. "All out-of-pocket reimbursable expenses shall be necessary and prudent, and must relate to the examination process in some way," Somma said. "VECs and VEs are expected to use good business judgment with respect to reimbursement amounts. The examination reimbursement fee cannot be used to offset non-session related costs and must be kept separate from other accounts."

Somma pointed out that business expenses such as postal, utility, fuel and printing charges, are increasing: "Our VE teams are feeling the effects of the current economy, too! Teams are retaining reimbursement at amounts considerably larger than previous years. The amount of out-of-pocket costs that our VEs and the VEC are expending to provide authorized services in connection with Amateur Radio operator examinations continues to rise."

Recent ARRL VEC cost-cutting steps have included staff reduction, reduced printing charges of ARRL VE training material and exam software, renegotiating shipping and printing contracts and eliminating lesser-used services. "Only so many cost-cutting measures can be justified without

cutting back significantly on services essential to our VE teams, our customers and our program,” Somma said. “As a result, an adjustment was needed in the 2009 exam reimbursement fee if we intended to maintain the basic levels of service that our VEs, VE teams and candidates have come to expect.”

Somma said that the ARRL VEC permits its VEs to retain a portion of the exam fees they collect to directly reimburse themselves for out-of-pocket expenses incurred in setting up and conducting their examination sessions. “As long as the expense is warranted and has been prudently incurred – and the expense is specifically related to exam administration – then the fee can be retained,” she said. “The team should keep a complete record of the expenses paid (with receipts) in team records for two years. Records must be made available to the ARRL VEC upon request. Costs not related to the exam session processes or paperwork are not reimbursable.” “We believe that the ARRL VEC’s level of assistance and services are outstanding,” said ARRL Chief Operating Officer Harold Kramer, WJ1B. “Exam supplies, such as paperwork and software, shipping costs both to and from the VEC and ARRL VE accreditation, as well as credentials, are all free of charge for our VEs. We maintain a toll-free number for our VEs and we even offer reimbursement to the VE team for their expenses. We appreciate the dedication and volunteerism of all our VEs in the field. This is why we offer so many services free of charge. This is why we have that same level of duty and commitment here. Every test fee we collect goes right back into the VEC program and to serving the Amateur Radio community.”

RARS Field Day 2008 – The Results Are In

Article by Cliff Broughton AG4XR

Yes, the results are in for Field Day 2008 and, as usual, RARS has placed nicely in our traditional 7A low power class – Second Place. I say “as usual” because we have a great team that produces an outstanding effort every year and has a lot of fun doing it. Well done, everyone!

I love Field Day! It’s the most fun I have every year with Amateur Radio. Field Day is, above all, three things. One, it is a chance to demonstrate our emergency preparedness, to work out the kinks and to at least annually make sure we are ready for those emergencies. We all know how prone we are to hurricanes and other emergencies in this area. Next, it is frequently the first opportunity for new hams and non-hams to see and operate HF! This was my first taste, and the bug bit! It is a chance to mentor/Elmer others. Finally, it is probably the best opportunity for hams as a group to socialize and have fun with amateur radio!

Having said that, what else is Field Day? There’s the old debate – it’s a contest / no, it’s not, it’s about emergency preparedness / wait, it’s about socializing and having fun! Well, here’s my posi-

tion – it is ALL of these and more! There is no reason we can't treat it as a contest while introducing people to HF (Can you say GOTA?) and having a relaxed, entertaining weekend! By the way, isn't it more fun to actually WIN the contest? ;-)

Number Crunching is Fun!

I thought it might be fun to take a look at how we did over the last 20 years. Most people know that I fall into the intense contest camp – maybe not up there with the Murphys, but more so than most of the club. I also believe that we can have a lot of fun on Field Day, but what's more fun than winning? So, let's take a look at how we've been doing over the last twenty years or so. The results might be surprising to some. First, the raw numbers. (Hey, I'm a database consultant. I'm all about studying the data!)

Year	Class	Contacts	Score	Place in Class	Overall Place	Points per QSO
2008	7a	3382	9752	2	47	2.88
2007	7a	3224	9220	3	53	2.86
2006	7a	2692	7868	3	81	2.92
2005	7a	3143	8748	3	60	2.78
2004	5a	2590	7682	10	97	2.97
2003	7a	3062	9412	3	33	3.07
2002	7a	3481	10372	3	37	2.98
2001	8a	3627	10828	2	--	2.99
2000	8a	4064	12510	1	16	3.08
1999	5a	1904	5092	24	Deep!	2.67
1998	8a	4427	13802	1	8	3.12
1997	7a	3596	12096	1	11	3.36
1996	7a	2751	10280	2	--	3.74
1995	7a	2654	9802	2	--	3.69
1994	7a	4521	8785	3	--	1.94
1993	9a	1761	5944	2	--	3.38
1992	6a BATT	978	5525	2	--	5.65
1991	6a BATT	1940	11270	1	--	5.81
1990	6a BATT	972	9260	2	--	9.53
1989	Could not find data		---	-	--	----
1988	6a	551	1461	8	--	2.65

*The data for 2002 forward comes from the ARRL results database, a real work saver for this kind of thing. Earlier results are in PDF scans of QST and are not searchable by computer. But I digress. On with the show.

Before 1993, it looks like RARS was a mainstay in the 6a Battery category. I think I recall that RARS holds a record high score for 6A Battery, but I haven't been able to verify this. Maybe

some of the long-time RARS members can write something about the earlier years for the Exciter or the email list. I'd like to hear about the 'old days', hi, hi.

Since '93, we've primarily been in 7 Alpha, with occasional excursions into 8A, 9A or even 5A. In 1993, we placed first in 9A, but that's probably not really a good thing. With a score of 5944, that's 6th place in 7A, somewhere in the middle of the field. We entered 5A in 1999 and 2004. One of those years, we split the operation between the current location and the State Capitol site, and I'm not sure what happened the other time, but each time, the results were not good. The lesson learned there is to keep to only one operation. 'Nuff said.

The 7-Alpha years have been pretty consistent. Out of 10 years, we have been 3rd in class 6 times, 2nd place three times, and 1st place once, with overall finishes as low as 81st and as high as 111th in 1997! Ooh, missed the top ten by 16 points! That's 8 phone contacts or 4 CW contacts!

RARS really shined when we were 8-Alpha. Second place in class in 2001. And in 1998, our best showing over the last 20 years, and three places better overall over the previous year, 13,802 points, 4427 contacts, 1st place in class and 8th place out of 2055 logs submitted! World Class! This was also my third year, both as a ham and at Field Day with RARS.

Who was the competition?

The competition has varied and shifted over the years. In the mid-90s, our biggest competition was W6TRW, the TRW-Xerox ARC. Since then, they have faded. W6TRW hasn't submitted a log for the last two years, even though they have a web page for FD.

Lately, the competition is from the northeast and the northwest. WINY in Western Massachusetts has placed 1st in 7A twice in the last three years and 4th in both '02 and '03, WINY is now our biggest competition in class. From Tacoma, WA, W7DK is the other up and coming club, placing 2nd in '07 and swapping with us for 3rd this year. Look for strong showings from both next year.

So what does it take to place first in class, or even in the top 10 scores?

Looking back over the last 7 years, the 10th overall score each year went from 12,600 to 16,500 points. QSOs varied from 4300 to 4900 with one exception of 3637. Points per QSOs were generally around 3.0 to 3.2 with two around 3.5.

As for first place, well, if you ask me, that just has to be an anomaly. One club, err. Two clubs together, W3AO, The Potomac Valley Radio Club (PVRC) and the Columbia (MD) Amateur Radio Association (CARA) teamed up for their 111th consecutive year. In 1998, they finished second overall, their first year. They have placed first overall every year since! Anyone that operates

Field Day will probably recognize them immediately when they hear their exchange... 23A, 26A, 19A.... even 51A in 2003. If you're interested, check out their soapbox entry for FD2008 on the ARRL website.

First in 7A (2002 to 2008) takes scores from 9198 to 13002 points, 2745 to 4199 QSOs and a points per QSO ratio of 3.36 to 3.8! Take note of the last.

What does this all mean?

Good question. We've covered the facts and the numbers. What do they tell us? First, we've been consistently running third in class for much of this decade. We like 7-Alpha and I think that's a great thing. It's a competitive class. Go higher (8 or above) and the competition thins out too much. Lower transmitter classes, I'm undecided. Traditionally, the top ten overall have 60% or more of the top ten stations are 6A or higher. This year, only 7 of the top 25 stations were 6 and above. From another point of view, 7A offers a good number of stations for the number of operators we usually have. We might consider 6A for a better use of the number of operators, but maybe not.

I won't even consider shooting for first overall right now. W3AO is going to dominate that for a while and I don't see RARS fielding 20 or more stations anytime soon.

We are world class when two factors come together – first, we hit over 4000 QSOs and second, we have a pts per QSO ratio over 3.0. These two results give us the scores we need, over 12,000 points, first place in class and even the top 10!

So how can we do better?

Two factors will get us that extra oomph! More QSOs and more CW and Digital contacts! We need to be doing better than 4000 contacts, really around 4800 or more. Next, we need to crank up our CW and digital efforts. Remember, they get us twice as many points as phone contacts. (And this coming from a 'phone guy'.) The top stations have a strong CW presence on Field Day. We used to have this, but it faded when we stopped fielding a strong 20m CW station. This year was the first time in a while that we have had any significant presence on 20 CW. Great job, Chuck. We've been slipping in the other bands on CW too. But there are several bands where we could improve. On balance in order to get first place in class, we need to make about 2500 more points next year. (Remember, the sunspot cycle should be more favorable.) I think we should shoot for about 200 to 400 more combined CW and Digital contacts and about another 200 to 400 on phone next year, spread across all the stations. If we increase on the lower side, maybe first in class, but it will take a good 800 more contacts, if not more, assuming conditions and the sunspot cycle improve next year.

That's the numbers improvement. Next, let's get some more member turnout – especially in

the wee hours of the morning! C'mon, gang, we have something like 250 members! Let's get some more people out there! I know it's a bit of a drive to the site, but believe me, it's worth the fun, the excitement, and the social gathering! This is the best opportunity all year to work HF with some outstanding gear and with so much experienced talent in so many areas of ham radio! Want to try something else? How about setting up a station to work satellites? I don't think we had that this year. How about a second digital station? Or a third? Did you know that it was only recently that Digital was ruled as a separate class from CW and Phone? It used to be considered part of CW, so we could only have one station (CW or Digital) on any band at any one time.

What else could change?

And of course, there are other areas to improve. Here's the part where I might step on some toes, so I apologize if anyone is offended, but I just want to throw this out to see how most people feel. Don't throw any tomatoes at me, let's just have some healthy discussion!

First, the food. Everyone behind the food puts in a great effort. I just don't care for barbecue. How about some alternatives for the main course? The side dishes are generally good, and the usual country picnic fare, so I'm not complaining. ;-) Except that soda in addition to tea would be great! Or at least a whole lot of lemonade available all day in the summer would be great too. (Or am I getting senile and forgot that we had that stuff last year?)

Next, the location. Let me say that the current site, used since 1996 (my first Field Day), is perfect in almost all respects. Jim and Beth Carroll (N4CAE and KF4QMR) provide us with the use of their farm, complete with swimming pool! They spend a lot of time and effort getting the fields ready and put up with a whole lot!

Jim and Beth, RARS cannot thank you enough for what you do!!!!

The site is almost the perfect size, with a nice assortment of trees for hanging antennas and losing arrows in the forest in the process. ;-) It is far enough from the neighbors that the generators don't cause any noise problems. We have done very well there. Did I remember to say thanks to Jim and Beth enough? Who else would allow an invasion on their farm every year? OK, here's the 'but'. As much as we like the location, it has two downsides that are basically the same problem. First, it is quite a drive from Raleigh. Second, there is no way to get the public display bonus because of the location, but this is a secondary issue.

I wonder how much additional club member participation we would have if we could find a location in or near to Raleigh/Cary. Perhaps we could alternate between Apex and something local? I don't want to offend anyone or to even infer to Jim and Beth that we don't appreciate the use of their farm – far from it. I just wish it weren't so far out of town!

Finally, what can YOU do?

Here's the most important rule: let's have fun! Everyone has different ideas on how to make this a fun event for themselves. Get more involved! Haven't been to Field Day in a few years? Or Ever? Make 2009 the year to get in the game! Want to operate casually? There are all kinds of phone and CW stations for that. Want to learn CW? Start now and be ready for next year! What about Digital operators?

Are you a dyed-in-the-wool contester? Let the band captains know! Some bands are pure competition mode all weekend! The pure competition is the 40 phone station. Mike, WA4BPJ is definitely our star contester at Field Day, backed up by the rest of the Murphy clan! I'm probably a not-so-close second on Field Day, but I don't expect to be in town next year. Here's an opportunity for someone to take the reins of the 15/80 phone station! Want to do hard core CW contesting? Check out the CW band stations. 40 and 20 will be the heavy contest stations, with 80 and other bands working a more moderate pace.

Want to get your feet wet or operate a little more relaxed? If you haven't been active on HF in the last year, check in to the GOTA station! This is the training ground for new hams, techs wanting to get some HF experience, and hams that have been out of the game. It's also a good place to learn how to do Field Day, even if you just log, or actually operate. Learn here and then introduce yourself at the other stations!

Speaking of relaxed operation, consider this. The mood or pace of operation changes on each band as day turns to night. During the day, the upper bands are hot while 80 and 160 are usually dead. As the sun goes down (or comes up), the level of activity shifts from the high bands to the lower frequencies. On 40 meters, it cooks all weekend, which keeps Mike happy. So, if you want to find a good place to learn or get some low-pressure experience, hit 80 and 160 and maybe 40 CW during daylight hours, or 20, 15 and 10 meters as the sun goes down.

Also, look for any station in the middle of the night. Remember, Field Day is a 24 hour operation! Even though a band/mode might be running in high gear all night, people get tired! There's always a station where the operators are dead tired and ready to fall asleep, or have already shut down because they're exhausted and nobody is around to take over. Better to have someone operating than a dark station!

For 13 years, I've been enjoying Field Day with RARS. Like many hams, it was my first real taste of being a ham, the first all night operating session, first time freezing my backside off because the low was 30 degrees colder than the forecast, and still, every year is a blast. Almost every year, we place high in or class, thanks to the efforts of a lot of people in the club – the Field Day Chairs, (Thanks Neal for the last several years), the band captains, the co-captains, the

people that help set up, the Carrols for the use of their farm, and especially all the participants that all help us do as well as we do.

Now let's do it again next year, only better!

WINNING FIELD DAY?

**Article by Gary Pearce KN4AQ,
2008 GOTA Station Chair**

My 2 cents on Field Day and winning. This is background mostly for our newer hams....

Most clubs and groups across the country, and around here, take a relaxed view of Field Day. They set up a few stations, get some practice, make a bunch of contacts, have a good time, and don't worry too much about where they place in the standings (but they all check to see). Operating procedures also tend to be relaxed. They're not in "contest mode," trying for the maximum rate per hour. Most of the operators don't have much contest experience, and they're not really trying to get it. Everyone is invited and encouraged to operate.

A few Field Day operations are in full contest mode. Only experienced operators get a seat at the main stations, and they are out to get the maximum number of contacts they can. They are also out to get all the points they can, so they'll have more CW than phone, and will max out all the possible bonus points. They will solicit new operators for their GOTA station, and train them to learn contesting. They have a good time, too, but for them a good time is flat-out, full-bore operating.

RARS, and probably a fair number of other clubs, sort of try to have it both ways. We have some highly experienced operators who go to the limit. We have a lot of casual operators who do push themselves, but don't go all out for a maximum contact rate. We have new hams who get to operate both the GOTA station, and also some of the main stations. They get that opportunity because we don't have enough "contest-mode" operators to keep all the main stations humming for the entire operating period.

This mix means that we probably won't "win" a class, but we'll do well. And that's been the result over the 18 years I've been with RARS: one 8A, TOP 10 First Place, and a lot of second or third place in 7A or 8A, where there are maybe 25 to 50 stations competing nationwide.

A few times we actually sponsored two separate Field Day operations. One was "out to win," and the other "out to have fun." Everyone had fun, of course, but each setup gave the operators the opportunity to do their thing. But doing that is extra effort, and the Contest side is

small, competing in the 2A or 3A class. These classes are huge and highly competitive, and as good as our guys are, they didn't come in first. (One year, though, we did have a QRP/Battery team that set a record.)

Most years we'll do our thing as one group, and end up near, but not at, the top of our class. Our pros get their enjoyment from sheer operating, watching the rate meter stay high, and piling up a big score for their station. Hopefully they don't feel that their effort is being dragged down by our more casual operators. The "out for fun" group may aspire to learn and improve, but the pressure is not on to win. Everyone in RARS can come to Field Day and find a place where they can have fun.

When the results are announced, we'll all look to see how we did, and maybe talk about how we could do better. I think our goals should be improving participation and trying to make sure everyone who comes out can learn something and have a good time. We can encourage our members to help with bonus point activities, learn and operate CW, and even sharpen up the contest operating skills. But winning? Not so much. There will usually be a group in our class that's a little more dedicated.

My thanks to Neal N4HAF for leading the effort over the past few years, and to everyone who came out, set up a station or operated one.

Article by Glen Whitehouse K1GW and John Wettroth KF4EUZ Featured Presentation for January RARS Meeting



Late last winter, two ham friends set off to experiment with Software Defined Radios (SDRs). One was a relatively new ham but very accomplished engineer with years of design and building experience; he was lucky enough to have a well equipped lab. We'll call him John. The other had been a ham for over 50 years but was light on both design engineering experience and building expertise. He did not have any lab at all. We'll call him Glen.

At a RARS meeting Glen made a general announcement that he had become interested in building a tiny receiver since he had seen one working at a Homebrew Night at the Salt Lake City ARC. He even had purchased a kit but had not assembled it. The kit included several SMT (Surface Mount Technology) capacitors. Glen asked at the meeting if someone could show him how to solder SMT-size capacitors. John volunteered. Since then a wonderful friendship has developed.

Since then we have had a great time building and experimenting with Radios – Software Defined. We would like to introduce you to this segment of ham radio hoping that you will enjoy it too.

January Meeting Presentation

Software Defined Radio Demonstration

Kit Building Demonstration

Review Software Alternatives

Our New Club Project

At the January 6 RARS Meeting we will cover the following topics:

1. An overview and demonstration of what SDRs are and how you can get enjoyment from building this \$15 40M receiver --SoftRock V6.
2. A demonstration of what it takes to build a kit that uses tiny parts.
3. A review of some of the various free software packages that you can use to make this radio work for you. And the computer capabilities you will need (and probably have).

4. We'll explain the club project of supplying SoftRock v6 kits and of the support that we will be offering.

The club project kit includes some size 1206 capacitors. They are .126" x 0.063" (about 1/8 by 1/16"). That may seem small but not to worry; we have learned how to do a nice job of installing them. We'll be glad to share the secrets with you. Don't be intimidated by the articles on the web and on YouTube; they make it seem harder than it really is. Forget the frying pan and toaster oven approaches to Surface Mount soldering; for our size components (which are actually large in the world of Surface Mount components) the right soldering iron will be just fine! The kit also includes some bifilar transformers that you must wind on toroid cores. Again, not to worry; if you can count you can do this.

The SoftRock40 that you can build is the "radio" part of the project. It takes signals from your antenna and readies them for your soundcard. Most of the processing is done by your computer. It is easy to set up. Attach your 40M antenna (it doesn't have to be spectacular but please give yourself a chance – no hookup wire stretched across the floor!), power supply (12v DC) or even a 9v battery, and your computer to the SoftRock40 and you'll be in business.

Now for a little theory. This is simplified a bit and we encourage you to get on-line to fill in the details or yourself, they're fascinating. Google "arrrl sdr" to find some readable starting points.

The operation of the receiver is a superhet design with a very low Intermediate Frequency (IF)- "almost": direct conversion. The IF is chosen so that it can be digitized by a PC sound card- generally 48 KHz or 96 KHz but as high as 192 KHz for an extra hundred dollars. The RF input signal is mixed with a fixed oscillator that is near the desired frequency. The result of this mixing is to translate a band of frequencies down into a range of frequencies from DC to the sound card's maximum frequency. For a 96 KHz sound card, a band of about 1/2 of a typical HF ham band can be tuned on the PC. The final signal selection and demodulation are done in software from this range of frequencies. The software actually has a second "virtual" mixer and demodulator that is all done in software- a lot of arithmetic that models a phasing/weaver type SSB receiver. In a software defined radio, all that is necessary is to translate the input signal down to a range that can be digitized. All the rest of the work is done in software. In some professional SDR designs, the RF signal is not even mixed down; it is digitized at the RF input frequency and processed with a very high speed Digital Signal Processor. These techniques are reserved for the NSA and military for now but stay tuned, technical progress will likely bring this performance to hams in a few more years.

It probably takes a couple or three hours to build the SoftRock including identifying parts, learning how to handle them, and cleaning up the circuit board with rubbing alcohol and soap and water. If you haven't worked with these small components, it is likely you will need new

tools enough tools to feel comfortable working with lilliputian components.

Basic tools are perhaps available from stores around Raleigh but I bought mine from internet sources. Here are the tools:

1. A vice to hold your PC board. Look for the PanaVise Jr.
2. Optical headband magnifier or a lighted magnifier.
3. Temperature controlled soldering iron. You probably could do this work with a 20W iron with a very fine tip.
4. Thin, .020" or thinner, rosin core solder. This is a must; I tried to build one of the boards with my regular "thin" solder and it was a disaster. Get the right solder even if you have to wait for it to arrive. Some eBay vendors sell it in small quantity.
5. .100" or narrower desoldering wick (sometimes called solder wick), I don't think it can be too narrow. This stuff is like braid.
6. Liquid flux; I haven't used it but I would like too.
7. Tweezers and small diagonal cutters
8. A bright light – desk lamp.
9. Rubbing Alcohol and brush - Use this to clean the rosin off the board.
10. Soap and water also used to clean the board but you already have this.

There are excellent references, links and 'Heathkit' like instructions on the at http://golddredgervideo.com/wb5rvz/sr_lite/

How You Can Build Your Own Softrock40

Technically, Softrock is part of SDR legend and is no longer available. An extremely similar version is being sold by Tony Parks, KB9IYG, one of the original designers. As you can read at groups.yahoo.com/group/softrock40/message/24357, "The v6 SoftRock Lite is a single-board receiver kit that provides single-band coverage.[They are available for many HF bands]. The board size is 1.5 inches square and a height of about 0.6 inches. Connections on the board provide for QSD mute so the SoftRock can be used with a separate transmitter.

The RARS v6 SoftRock Lite Project

Glen and John would like to help other area hams who might be interested in getting started with a basic SDR. One or both of us hopes to be available before RARS meetings and at RARSfest to help you learn the process. The club is offering SoftRock v6 kits for \$15; you are right you can buy them for \$10 from Tony. With the extra \$5 from each kit we hope to assemble a tool box of the unique tools needed for SMT construction. We can perhaps use the toolkit before club meetings or at RARSfest to provide some initial experience to first time builders.

If you are interested in building a SoftRock v6, or if you have any questions, please contact Glen, K1GW (k1gw@arrl.net) or John, KF4EUZ (jwet@mindspring.com). If you would like to have

one of the kits, please PayPal \$15 to K1GW@arrl.net.

Both of us have really enjoyed our exposure to this technology. Glen especially likes learning about an area of the hobby that he has not been exposed to before. John enjoys applying electronics to his new hobby and learning about ham radio as he does so.

We hope you will join us in this corner of Ham Radio. We are looking forward to a RARS on-the-air activity night for SoftRock radios and their builders.

APRS® at the City of Oaks Marathon

Article by Don Downs WA4AVU

Ever since I saw it in action at the 2002 MS-150, I've thought that APRS could have a special role in Amateur Radio communications at public service events. I haven't seen much consistent APRS use since then, so I was excited when Bill Cole KG4CXY contacted me about running an APRS Station at the City of Oaks Marathon.

APRS, the Amateur Packet Reporting System is a registered trademark of Bob Bruninga WB4APR, who invented it. Although many people associate APRS with vehicle tracking and weather reporting, it is designed to be an amateur radio-based, real-time tactical communications system.

Bill's plan was simple: we would create a portable APRS display using my tablet PC and have APRS Trackers in the lead and trail vehicles. While APRS is capable of much more than simple tracking, this seemed like a good way to start utilizing APRS more in public service events. Gary Pearce KN4AQ rounded up the RARS trackers for use in the vehicles, and Byron King K4NGJ provided a TH-D7 hand held to simplify the portable APRS station (see photo).



Photo by Don Downs WA4AVU

Setup

In an attempt to outwit Murphy's Law, Bill, Gary, Steve Ferrarini KJ4BX, and I met the day before the marathon to test out the equipment. The results were a little unnerving – I received one packet from Steve on the way to the meeting, but once there I could only receive packets from Gary. While Gary and Steve drove around the course, I consistently received reports from Gary's tracker, but only one or two reports from Steve's.

Gary gathered up the trackers, picked up a third one from Cliff Broughton AG4XR, and spent the afternoon testing them.

The Marathon

Sunday morning, Gary arrived early and installed the trackers in three police cars: one that lead the full marathon; one that lead from the turnaround point on the half marathon to the finish line; and one that followed the last runner. Because Gary would be riding his bicycle in the park and unavailable to assist with the trackers, Cliff AG4XR was standing by in case we had problems.

During the marathon, the portable APRS station was quite a novelty. It was fun to look down at the computer and see the current location of the lead runner, although it was obvious that a few packets were being missed, making the call-ins from John Snellen AI4RT in the lead car indispensable.

About two hours into the race, my laptop battery ran down. So much for the portable station! Later in the afternoon, net control station Thomas Babb WW4TLB discovered he had a satellite Internet connection in the command truck and proceeded to monitor the trackers via the Internet. Thomas was working side by side with the medical branch in the Wake County Emergency Management command truck, and with the reports from hams, medical teams, and APRS trackers, he had a good view of the overall situation on the course.

Future Plans

At least some amateurs came away from this event feeling that APRS showed promise. Gary KN4AQ states, "I think APRS is a terrific tool that's underutilized for public service in our area." Some had ideas for future operations, including Thomas WW4TLB who adds, "Next year, we could add a computer to monitor APRS and maybe add APRS to some SAGs."

But not everyone thought the results were worth the effort. "My views on the usefulness of APRS for public service events is contrary to many," says John Snellen AI4RT. "I feel it has limited usefulness and is more trouble to set up and maintain than its value," he adds. John also points out that there are smaller devices available for personal or vehicle tracking. But he leaves the door open to be persuaded otherwise, stating, "Perhaps with more information and knowledge my opinion will change."

Gary KN4AQ agrees that we are not currently getting full benefit from APRS. "I'm not sure why that is, but what I see is that the APRS experts aren't volunteering at the events. So the event volunteers sometimes try to cobble some APRS together from their limited resources and knowledge. The result is less effective than it could be. Not enough coverage, not enough trackers, and not enough understanding of what results we should expect, or how to make

them better,” he says.

Certainly, there was room for improvement in this event. Some packets were not being reported, resulting in slow updates or what appeared to be inaccurate tracks. For example, the tracks shown on <http://aprs.fi> for W4DW-2 (the police car leading the marathon) do not show position packets for the last few miles, although reports from this area were received from W4DW-1 (the police car leading the half marathon from the turnaround point). (See figures).

Shortly after the marathon, Gary KN4AQ posted a notice to the RARS reflector asking for volunteers to test the RARS trackers. A team consisting of Steve KG4BX, Cliff AG4XR, and I will be using the trackers around town and monitoring the tracks. The goal is to determine if the units are working properly, if any updates are needed to improve their reliability, and to form a team of operators who are familiar with the trackers and can make them available for other public service events. “We’re going to try to grow our own APRS experts by getting the three RARS Trackers that Jeff [Wittich] AC4ZO built out into the hands of members who want to try them out and learn about them. At upcoming events, we should have a more skilled group, ready to deploy them as effectively as possible,” Gary explains. A coordinator will also be named to assist with getting the RARS trackers to public service events.

Conclusion

Anytime you try something new, you may succeed, fail, or land somewhere in between. I would view this operation as a partial success. To really benefit from using APRS, we need to use it more in order to gain practice and familiarity.

I hope to continue to explore using APRS at public service events. But I’m new to APRS and could really benefit from others’ experience. Whatever your experience level, if you’re interested in APRS – and especially if you’d like to help promote APRS usage in public service events – I’d like to hear from you. You can contact me on 146.64 or via email at WA4AVU (at) ARRL.net. Or maybe you could send me an APRS message!



Photos courtesy of *The News & Observer*.

The Raleigh Marathon

Article by Gary Pearce KN4AQ

A little over three miles of the Marathon went through Umstead Park, where the lead and trail police cars couldn't follow. Bob Conder K4RLC and I were deployed on bicycles to monitor that segment of the race.

Something unusual happened as I rode alongside the lead runner, Nicholas Kurgat from Chapel Hill. He seemed anxious about something, and tried to ask me questions. That's never happened before. He's from Kenya (but now lives in Chapel Hill), and apparently doesn't speak English very well yet. That, combined with the radio traffic in my ear and the bouncing of my bike on the gravel trail, kept me from understanding him very well.

But I got the impression that he was concerned about whether or not he was on the right route. When we passed a small connecting trail, he asked "which way?", even though there was an arrow showing straight ahead. And he asked something again as we passed the large "16 Mile" marker. This would be a big deal for the first place runner if there was something to be confused about, but everything was well marked, so I assured him he was on the right course.

I was wrong.

I learned later that Nicholas had registered for the Half Marathon, not the full Marathon. A *News & Observer* story on Monday explained that he missed the turnaround for the Half Marathon (at about eight and a half miles). The turnaround was obvious, but apparently Nicholas was concentrating on the police car in front of him - the car that would continue leading the full Marathon (and carrying John AI4RT). The full and half Marathon routes were identical up to that turnaround point, so the police car that would lead the Half Marathon back (carrying Phil Cunningham AE4PC) just drove on ahead and waited for the first runner to make the reverse and head back.



Gary Pearce KN4AQ and Bob Conder K4RLC at the Raleigh Marathon.

Nicholas' Half Marathon should have ended after 13.1 miles, back at the Start/Finish line. But the 13 mile marker he crossed had him on Ebenezer Church Road, approaching Umstead Park. I picked him up at the 15-mile point, at the park entrance. No one else was running near him, so I was probably the first person he could talk to without stopping (on a Marathon, there are no "rest stops" - at least not for the lead runners). But I couldn't understand him very well,

and I certainly didn't comprehend the nature of his concern.

The N&O story said that Nicholas trained for only a half Marathon, and had never run a full one. He was going strong as I paced him at about 12 MPH. He left me in the dust as he ran up a fairly steep hill, where Bob K4RLC picked up the trail. He finished first, with a time of 2:19:34, about two minutes ahead of second place John Crews. But since Nicholas was registered for the Half Marathon, he was disqualified.

Nicholas wasn't the only Half Marathoner to miss the turnaround. A few others stopped when they realized their error and were sagged back. Had I understood his problem, he may have stopped, or decided to continue (which worked out pretty well for him except that he was disqualified). We could have forwarded the information to the Director and maybe prevented some confusion that occurred at the end of the race, when the mistake was finally discovered. But we would not have changed the outcome.

Minutes of the October 21, 2008 RARS Board of Directors Meeting

The Raleigh Amateur Radio Society Board of Directors held its monthly meeting on Tuesday, October 21, 2008 at the Triangle Radio Reading Service on Six Forks Rd, Raleigh, NC. The following persons were present: Selene KG4RMT, Hank K4HM, Chuck K4HF, Steve KJ4BX, Greg KE4PAX, Rick KB4TKQ, John AI4RT, Ken KI4OTO and Charlie WB4DCM.

The meeting was called to order by President Selene KG4RMT at 7:11 PM. The minutes of the last meeting were approved as amended.

VP Rick KB4TKQ announced that the November meeting program would be on batteries and presented by Johnny WA9SZL. The December meeting program would be the Encore Singers.

President Selene KG4RMT announced that she had purchased a tote box to keep supplies for the refreshments. The Board approved a motion to reimburse her for the expense. She commented that the auction went off well and that she had not received any negative comments. We were reminded that the December meeting would be at the First Alliance Church and that members were to bring snacks while the club would provide drinks. Also, the VE team will be testing at the November meeting.

Treasurer Greg KE4PAX advised that we now have 237 members. The auction generated \$129 for the club from items donated to the club.

Steve KJ4BX advised that he had heard comments that we should have our regular club meet-

ings at First Alliance Church in lieu of Forest Hills Baptist Church. Therein followed discussion about moving the meeting place to First Alliance Church.

Committees

- Education Committee Virginia NC4VA was not present, but had advised President Selene that they were unable to workout a time for a general class. They are now looking at holding the class early next year.
- *Exciter* editor Courtney was not present but it was announced that we now have eight (8) members, without email access, that receive printed copies of the *Exciter*. Selene is looking for volunteers to print and mail *Exciters* to the members without email access.
- Webmaster Assistant Hank K4HM has done upgrades to our web page.
- Field Day results will probably be published in the November issue of QST.
- JARSFest will be Sunday, November 16 in Benson.
- Public Service John AI4RT announced that they had about 50 bicycles in the Ride Without Limits. The next event is the City of Oaks on November 2. That course will be around the RBC Center and Umstead Park.
- RARSFest Co-Chair Hank K4HM reminded everyone that the date has been changed to Saturday, April 11, 2009. That is the Saturday in Easter weekend. We will be the NC State Convention for ARRL. We will go for the second Saturday in April as a fixed RARSFest date if possible.

Old Business

- The Secretary has not purchased a recording device for taking minutes. However, it was indicated that was not a critical issue.
- There was discussion about obtaining an amplifier for use by presenters during meetings. Ken KI4OTO indicated that he had a unit that he would loan but it needed speakers.
- Forest Hills Baptist Church will be the meeting location for November and First Alliance Church will be the meeting place for December. Upon motion made and seconded, Steve KJ4BX will check to see if we can use the First Alliance Church for our regular meetings. Testing is in the months of February, May, August, and November and that will require a room for 15-20 people.

New Business

- There was discussion about our monthly supper at the Golden Corral. We will shift our suppers for November and December to the Perkins Restaurant on 2657 Appliance Ct., just north of I-440 off Capital Blvd.

Board Comments

- Hank K4HM asked if anyone was interested in "fox hunts." There was discussion about locations, prizes, meals, equipment, etc.
- Greg KE4PAX advised that there were several outstanding checks that should have been

deposited. He will follow-up.

- Chuck K4HF advised that the Nominating Committee has a full slate of officers. That list is in the October minutes of the general membership meeting.

The meeting was adjourned at 9:05 PM.

Minutes of the November 4, 2008 RARS General Meeting

The Raleigh Amateur Radio Society held its general membership meeting on Tuesday, November 4, 2008 at the Forest Hills Baptist Church on Dixie Trail, Raleigh, N. C. There were 41 people present including three visitors: Don N8DDK, Harold (no call), and Mark KE4IZP.

The meeting was called to order by President Selene KG4RMT at 7:30 PM. At the request of the president, all persons present were requested to identify themselves by first name, call and class of license. After that, the minutes of the last meeting were approved as published in the *Exciter*.

Greg KE4PAX gave the treasurers report. We now have 240 members.

President Selene then gave the following announcements:

- Our monthly dinner on the 2nd Tuesday for November and December will be held at Perkins Restaurant off of Capitol Blvd.
- The Board will meet on the 3rd Tuesday, November 18th at the Triangle Radio Reading Service on Six Forks Road in Raleigh.
- Our December meeting will be held on December 2nd and will be located in the First Alliance Church. Since this is our holiday meeting, the club will provide drinks and everyone is encouraged to bring a treat to share. The Encore Singers will be the entertainment.
- The Myrtle Beach Hamfest has been cancelled for this year.
- The JARSFest will be on November 16 in Benson.

The following committee reports were given:

- Virginia NC4VA announced that the General Class will be given in January 2009. It will consist of three classes and then the exam.
- Virginia NC4VA advised that Skywarn would be on 146.88 WB4TQD repeater tonight at 9:15 following PCTN.
- Hank K4HM announced that the 2009 RARSFest would be on April 11. That is the Saturday before Easter Sunday. John A14RT will be the new chairman.
- The *Exciter* is looking for articles. If you have any interesting or funny events, send in an article.
- Gary KN4AQ gave information concerning ARISS and our participation. Jeff AC4ZO is

coordinating and will be working from Enloe School via telebridge for students to ask questions of the astronauts. Volunteers are needed.

- Gary KN4AQ presented information about RARS tracker equipment that works with APRS. At the City of Oaks Marathon, tracker units were placed in the lead and follow vehicles to track progress of the race. Needed is someone to take custody of the equipment and loan it out on short terms to members to learn how to use it.
- Hank K4HM in the absence of Chuck K4HF made the Nominating Committees report. We have 2 officers, 13 board members, and 3 committee chairs up for election. Hank advised that our VP nominee, Karl W4CHX did not meet the one year membership requirement, but was the only nominee that we had. With a motion and second from the floor, the one year membership requirement was waived. There were no other nominations for VP. Greg KE4PAX was nominated for treasurer. For board, the following nominations were made: Public Service Director John AI4RT, Public Information Officer Gary KN4AQ, Hamfest Chair John AI4RT, Exciter Editor Courtney KI4HOS, Net Manager Mary KG4OQA, At-Large Director Rod KI4LSM, At-Large Director Steve KJ4BX, At-Large Director Ken KI4OTO, FM Repeater Chair Gary KN4AQ, W4DW & W4RNC Trustee Jeff AC4OZ, ARRL Liaison Chuck K4HF, Education Director Virginia NC4VA, and Web Master Hank K4HM. For committee chair, the following nominations were made: Hospitality Chair Mary Jo K4MJL, 2009 Field Day Chair Mike WA4BPJ, and for Volunteer Exam Coordinator Liz KO4CK and Joe WA4GIR. There being no further nominations from the floor a motion was made and approved to close the nominations and have the secretary cast one vote to unanimously approve the nominations as read, which was done.

The door prize of a 2008 Handbook was won by Mike KB7NLA and the door prize of Emergency Communications Handbook was won by David KF4VXJ.

President Selene thanked our retiring VP Rick KB4TKQ for all his hard work and contributions to RARS.

Retiring VP Rick KB4TKQ then took the floor to introduce our program for the evening. Johnny WA9SZL will present a program on batteries. Johnny then jumped into such issues as lead acid batteries, Edison batteries (do you know what they are?), and Glass Mat Technology (GMT) batteries. Then he got into deep cycle versus starting batteries. He covered charging voltages and current and the proper equipment to deliver it. Johnny then advised that his shack runs off of batteries that are being recharged. Even his lights run off the batteries. When the electricity goes off, his charges quit but everything else continues. Johnny covered too much material to be properly repeated here. Once again, the "Shadow" has come through for us.

President Selene advised everyone to check the table in the rear for goodies for sale. She reminded everyone that the meeting next month would be at the First Alliance Church. The meeting was adjourned at 9:03 PM.



The **RARS Technical & Trader's net** is held on Saturday evenings on the 146.64 after the 8 pm RARS net.

Amateur Radio Nets



The **VOIP Hurricane net** is held Sundays at 00:00 UTC on the 146.775 repeater with a tone of 88.5 (IRLP node 4260). For information about activation details, go to www.voipwx.net.

Please join us on the **Carolina 440 net** every Monday night at 7:30 pm. This ragchew net utilizes the Carolina 440 UHF Link Repeater System. Comprised of the Raleigh, Down East, and Costal Wilmington link systems, there are currently 19 repeaters on the system, covering 21,168 square miles. For a list of these repeaters, please visit www.carolina440.net.



CAROLINA 440
UHF Link System
www.carolina440.net

Join us every evening at 8 pm on the 146.64 repeater for the **RARS Two Meter net**. You can give a ragchew, check in and out (this counts for our total numbers reported to the ARRL!), make announcements, and pass traffic. We also offer National Traffic System traffic training. All licensed stations are welcomed to participate in the net as often as they can. This net is also a great way to learn about amateur radio if you are newly licensed!

The **PCTN (Piedmont Coastal Traffic Net)** meets every night at 9 pm on the 146.88. The purpose of the net is to handle/pass NTS formal messages. Amateur stations are encouraged to check-in and participate. The backup repeater is the 147.105 machine with a PL tone of 82.5.





Join the **Tarheel Short Wave Listening (SWL) Special Interest Group (SIG)** net on Monday evenings @ 9 pm on 146.64. We discuss all areas of radio monitoring and welcome your logs! We also have a SWL/SIG meeting on the third Monday of the month in addition to our regular net.

Central Carolina SKYWARN

Please join us each Tuesday at 9:15 pm on the 146.88 repeater for the CCS net. On each net there are announcements, check-ins by county, and often a program or training spot. Check us out at www.centralcarolinaskywarn.net.



December 2 - "Revisit of the December 1989 Ice Storm and Fall of the WRAL-TV and WPTF-TV Towers" with WRAL Chief Meteorologist Greg Fishel and National Weather Service Warning Coordination Meteorologist Jeff Orrock KI4KKX



Apex Emergency Response Communications Net

This net meets weekly each Sunday evening at 9:00 pm on the 146.64 repeater. The purpose of the net is to assist ham radio operators in preparing to respond to emergencies, test their equipment, improve operating skills, pass traffic, and to provide those with a common interest an opportunity to meet. The Apex ERC Net provides amateur radio emergency communications for the Church of Jesus Christ of Latter-day Saints. All stations are invited to participate in this net.



The **Wake County ARES** net meets Thursdays around 2115 on the 146.88 repeater. We provide discussion and training for the implementation and provision of Emergency Communications for our served agencies, such as the American Red Cross and the local and state Emergency Operations Center. Please join us. www.wakeares.org.

The RARS

~~Exciter~~

Raleigh Amateur Radio Society, Inc
PO Box 17124
Raleigh, North Carolina 27619

NONPROFIT ORGANIZATION
US POSTAGE PAID
RALEIGH, NC
PERMIT NO. 2130

Future Meeting Information

The December meeting will be held at First Alliance Church, 4400 Buffaloe Rd, Raleigh, NC on Dec. 2nd. This gathering will include entertainment and prize drawings. Members are asked to bring a snack to share.